November 14, 1997

SOLID WASTE DEFINITION SUBGROUP MATERIALS FOR NOVEMBER COORDINATING COMMITTEE MEETING

BACKGROUND

Note: This background was written by Jan Connery, facilitator for the Solid Waste Definition Subgroup. At the end of the subgroup's final meeting, the members asked her to prepare a brief statement to provide a historical context for the subgroup's report. This statement was not reviewed by subgroup members prior to posting on the TTN. Minor revisions were made following a teleconference of Jan Connery, Dick Van Frank, Jeff Shumaker, Frank Ferraro, Fred Porter, and Ruth Mead.

The Solid Waste Definition Subgroup was formed by the ICCR Coordinating Committee in July 1997. The Coordinating Committee charged the subgroup with developing, for the Coordinating Committee's consideration, recommendations for a definition of the term nonhazardous "solid waste" to be used in regulations developed under Section 129 of the Clean Air Act.

The Subgroup consisted of 11 members with the following stakeholder composition: EPA (1), environmental (2), state/local agencies (1), burners (3), generators (1), small business (1), industry at large (2). Five members were from the boilers work group, three from incinerators, two from process heaters, and one from gas turbines. The group met four times. The Coordinating charged the subgroup with completing its mission by the November 1997 Coordinating Committee meeting.

As instructed by the Coordinating Committee, the Subgroup began by considering the statutory definition of the term "solid waste" found in the Solid Waste Disposal Act (as amended by RCRA) and the regulatory definition of the term "solid waste" found in 40 CFR 261.2. After lengthy discussions about possible approaches to defining solid waste, the group reached consensus on an approach that would define solid waste as discarded materials which are burned, except for fuels burned for energy recovery or materials burned for chemical recovery. The subgroup then focussed on defining fuels and materials burned for chemical recovery. The subgroup agreed that the definition of fuels would include a list of fuels. Absent acceptable criteria, concensus could not be reached on whether the definition of fuels should also include criteria against which materials not listed could be tested to determine if they were fuels. The subgroup also agreed that the definition of chemicals burned for chemical recovery would consist of a list of materials.

At the fourth and final meeting of the subgroup, six members put forward a "strawman" document. This document built on earlier subgroup decisions, as well as new ideas from the six members, to propose language for a full definition, a list of fuels, criteria for determining

whether a material was a fuel, a list of materials burned for chemical recovery, and a rationale for the approach. Other subgroup members also proposed additions to the fuel list.

Using these materials and suggestions put forth at the meeting, the subgroup reached consensus on the opening language of the definition, the list of fuels, and materials burned for chemical recovery. The subgroup also agreed to list a series of alternative proposals for criteria that could be used to determine whether a material is a fuel. These products constitute the subgroup's report to the Coordinating Committee. Areas of nonconsensus are included in this report either as "consensus concerns" that describe the area of concern for which consensus was not reached, or as a list of alternatives proposed by various members or groups of members.

With regard to the rationale included in the strawman document, the subgroup could not reach consensus by the end of the final meeting. The strawman rationale (as amended by comments from subgroup members) is included in this TTN posting. Members who disagreed with the strawman rationale were invited to provide an alternative rationale by November 7, 1997, for inclusion in the TTN posting.

RECOMMENDATIONS FROM SOLID WASTE DEFINITION SUBGROUP

129 Solid Waste Definition

For the purpose of regulation under section 129, solid waste is sludge, garbage, refuse, and other discarded material including solid, liquid, semisolid, or contained gaseous material, which is burned. Materials, as listed below, burned for the primary purpose of recovering their chemical constituents are not solid waste. Fuels, as defined below, burned to recover energy are not solid waste.

Consensus concern: Agency to take comment on analogous processes to consider under the primary purpose and recovery criteria (i.e., Table C).

Table A includes those materials specifically listed as fuels, and Table B contains the criteria for characterizing a fuel if the material is burned for energy recovery and is not already listed in Table A. Materials listed in Table A or meeting the criteria in Table B are fuels and are, therefore, not a solid waste. Table C contains a list of materials burned primarily to recover its chemical constituents and is, therefore, not a solid waste.

Table A

The following materials are fuels (in alphabetical order):

Bagasse, meaning the solid material (principally cellulose fiber and pith from sugarcane) which is produced at sugarcane mills during the processing of the cane to produce sugar.

Biomass is any vegetative matter that recently was alive, including agricultural and silvicultural materials, such as logging residues (slash), nut and grain hulls and chaff (e.g., almond, walnut, peanut, rice, wheat), orchard prunings, corn stalks, grass clippings, leaves, coffee bean hulls and grounds, etc. This definition does not include sewage sludge, fermentation tank bottoms.

Fossil fuels are coal, oil, and natural gas, as defined below:

> **Coal** means all solid fuels classified as anthracite, bituminous, subbituminous, or lignite by the American Society of Testing and Materials in ASTM D388-77, Standard Specification for Classification of Coals by Rank (IBR-see section 60.17), coal refuse, and petroleum coke. Coal-derived synthetic fuels, including but not limited to solvent-refined coal, gasified coal, coal-oil mixtures, and coal-water mixtures, are also included in this definition for the purposes of this subject.
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> **Natural gas** means (1) a naturally occurring mixture of hydrocarbon and nonhydrocarbon gases found in geologic formations beneath the earth's surface, of which the principal

constituent is methane; or (2) liquid petroleum gas, as defined by the American Society of Testing and Materials in ASTM D1835-82, Standard Specification for Liquid Petroleum gases (IBR-see section 60.17).

Oil means crude oil or petroleum or a liquid or gaseous fuel derived from crude oil or petroleum, including distillate oil (Nos. 1-4) and residual oil (Nos. 5 and 6).

Hydrogen

Wood Materials containing only natural levels of halogens, except railroad ties and pressure-treated wood.

Consensus concern: Keep the door open for evolving technology, *e.g*., process-engineered fuels.

Consensus concern: Mixing in other materials with any fuel.

Consensus concern: Some feel that fuels exempt from the definition of solid waste in part 261 should be added to the list. Others feel that not all of these materials should be considered fuels.

Consensus concern: Pulp knots, broke, pulp rejects, paper rejects, clarifier sludge, and other nonrecyclable fiber were identified as potential fuels that need to be tested under the fuel specification requirement in Table B.

Consensus concern: Agreement could not be reached on adding used oil that meets the specifications of part 279.11 to the list of fuels. The suggested alternative was to apply the fuel specification requirement in Table B to used oil to determine its status.

Table B

Materials that are burned to recover energy and meet the following criteria are fuels:

BTU Content:

Alternative A: Have either a minimum BTU content of 2800 BTU/lb on an as-burned basis (reference: minimum BTU content of anthracite culm); or a minimum BTU content of 4000 BTU/lb on a dry basis (reference: non-recyclable wood fiber).

Alternative B: Minimum BTU content of 5000 BTU/lb as burned and able to sustain combustion.

Alternative C: Have sufficient BTU content to ensure a net positive heat value to sustain combustion without additional fuel-energy input beyond auxiliary fuel for startup. The

sustainable combustion characteristic may be demonstrated in practice or based on combustion calculations.

Halogen Content:

Alternative A: There should be a separate halogen content for solid, liquid, and gaseous fuels. For solids, contain no more than 2 percent by weight chlorine. (Reference: chlorine content of wheat straw can exceed 3 percent and other biomass can contain 1-2 percent chlorine; dioxin primer indicated that excess chloride [i.e., in excess of the low stoichiometric levels needed to form dioxin] did not affect dioxin formation.)

Alternative B: Same as Alternative A, but contain no more than 1 percent by weight chlorine.

Alternative C: There should be a separate halogen content for solid, liquid, and gaseous materials. The specific limits should be based on typical levels of halogens found in a benchmark solid, liquid, and gaseous fuel.

Alternative D: There should be a separate halogen content for solid, liquid, and gaseous materials. The specific limits are to be determined.

Metals Content:

Alternative A: Contain a concentration of no more than the following:

Metal	**Concentration**	**Reference**
Arsenic	25	EPA Table 31, Coal, Site 114
Chromium	25	EPA Table 31, Coal, OFA Test
Cadmium	2.0	Part 279.11 spec. for used oil
Lead	40	EPA Table 31, Coal, Site 114
Mercury	0.3	EPA Table 31, Coal

Alternative B: Contain a concentration based on the used oil specifications of 279.11:

Metal	**Concentration**	**Reference**
Arsenic	5	279.11
Chromium	10	279.11
Cadmium	2	279.11
Lead	100	279.11
Mercury	0.3.	EPA Table 31, Coal

Alternative C: There should be a separate metals content for solid, liquid, and gaseous materials. The specific limits should be based on typical levels of metals found in a benchmark solid, liquid, and gaseous fuel.

Alternative D: Contain a concentration of no more than the following based on the proposed comparable fuels exclusion (FR April 19, 1996), for the following metals: antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, lead, manganese, mercury, nickel, selenium, silver, thallium. (Concentrations to be determined.)

Concern: May want to consider limits for other constituents, such as nitrogen, dioxin, PCBs, and cyanide.

Table C

Materials burned for the primary purpose of recovering chemical constituents are: pulping liquors, spent sulfuric acid, and feedstock for the production of charcoal.

RATIONALE DEVELOPED BY SIX SUBGROUP MEMBERS

Note: This rationale was presented, discussed and modified to read as shown at the November 3 and 4 meeting, but consensus was not reached on the rationale

In development of a definition of solid waste under Section 129 of the Clean Air Act, the Solid Waste Definition Subgroup thoroughly reviewed the relevant sections of the Solid Waste Act and its implementing regulations (40 CFR 257 and 261). EPA has devoted a considerable amount of effort in defining solid waste for use in hazardous waste regulation (40 CFR 261). These definitions apply to materials that are hazardous wastes, either by inclusion in the 40 CFR 261 subpart D lists of hazardous wastes or by exhibiting the characteristics of a hazardous waste as prescribed in 40 CFR 261 subpart C. The Subgroup, with the assistance of EPA staff from the Office of Solid Waste, reviewed in depth the part 261 provisions as a starting point to recommending a nonhazardous solid waste definition.

While some of the components of part 261 seem to provide a useful basis for the Solid Waste Definition under section 129, it is apparent that the part 261 definitions are complicated in order to address issues of importance to regulations of hazardous waste, but that much of the complexity was unnecessary for a nonhazardous solid waste definition for purposes of combustion under section 129. The full application of the part 261 provisions is too cumbersome for use in section 129. However, certain elements of the part 261 provisions are recommended for inclusion in the section 129 nonhazardous solid waste definition including:

- limiting of section 129 solid waste definition to only discarded materials
- exclusion of fuels from the section 129 definition of solid waste, including those which are exempted from substantive regulation under part 261
- criteria to determine if materials not specifically listed as fuels can be characterized as fuels or solid wastes

Much of the complexity of the part 261 provisions follows from the need to fully define the term discarded in such a way as to ensure that hazardous waste material is not inappropriately discarded or abandoned. The nonhazardous solid waste definition for use in section 129 regulations applies narrowly and as a result does not require the complexity of the part 261 definitions. First, the section 129 solid waste definition deals only with materials that are burned; other means of discarding and the issues they present are not relevant. Second, hazardous wastes are excluded apriori from the section 129 solid waste definition. Hazardous wastes disposal is regulated under the RCRA Subtitle C regulations and hazardous waste incinerators will have their own MACT standard. Third, the regulatory consequence of being a nonhazardous solid waste (as opposed to a fuel) is simply regulation under section 129 rather than regulation under section 112. In either case, emissions of hazardous air pollutants are stringently regulated. With the part 261

hazardous waste definitions, the regulatory result was regulation or no regulation, a decision with potentially serious environmental consequences. Because the section 129 solid waste definition applies so narrowly, only limited elements of the term discard need to be considered and much of the complexity in part 261 can be avoided.

The goal of the Solid Waste Definition Subgroup was to provide a clear, concise definition that would be as self-implementing as possible; that is, there would be no (or limited) need for requests for determinations of whether a material was a solid waste or a fuel or a material burned to recover its chemical constituents.

The recommended section 129 solid waste definition clearly includes as solid waste any materials that are discarded and burned. However, combustion of fuels for energy recovery and combustion of other nonhazardous materials for the primary purpose of recovering chemical constituents does not constitute discard and these materials are excluded from the section 129 solid waste definition. To avoid confusion as to what constitutes recovery of either energy or materials, it was necessary that fuels and materials burned to recover their chemical constituents also be defined. Further, to the extent that fuels are defined narrowly, a provision and criteria for identifying fuels not already listed is needed.